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Evolutionary Variations in Service Trade Barriers in Banking and their Impact: The Case of the ASEAN+3

Ilan Alon
Rollins College, ialon@rollins.edu

Xiaobing Feng
Shanghai Jiaotong University

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Xiaobing Feng   SHIFT Shanghai China

ILan Alon Rollins Business School Florida USA

Abstract

Although there has been extensive research on the ASEAN+3 that reveals a synchronization of regional economic patterns, including exchange rate management policies, research on the pattern of trade policies in the banking sector is limited. In this paper, we evaluate the trade barriers in banking and their evolution using data from three sequential surveys conducted by the World Bank and other international organizations. We find that the salient dispersions in trade restriction policies remain over time. We find no evidence of moves in the direction of liberalization in the sector. However, the micro- and macro-effects of the restrictions on trade in banking are complex. The economic modeling in this study provides an indication of real income gains and cost increases. The stability effects vary by country.

Key Words: Service trade in banking, Trade restrictiveness index, Restriction impacts

1. Introduction

A trade barrier in banking services is a general term that describes any government policy or regulation that restricts factor movements in international banking services trade.

, the main research challenge has been to transform essentially regulatory measures into quantitative data to allow comparisons across time and country. The earliest simple frequency measure was developed by Hoekman (1996). A more

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elaborate set of frequency measures, called the trade restrictive index (TRI), covering six industries, including banking in Australia (McGuire 1998; McGuire and Schuele 2001; Dee 2005a), was constructed by a research team at the Australia Productivity Commission, the University of Adelaide, and the National University of Australia. Researchers at the OECD (Dihel and Kalinova 2004; Dihel and Shepherd 2007; Nordås and Kox 2009) have challenged the TRI evaluation methodology for its subjective allocations of weights to the various regulatory components. Instead, they use statistical factor analysis to identify weights through the variations in the data.

However, there exist two problems in the current approaches: First, low cross-country variations in terms of restrictions may have little or no relationship with the relative economic importance of particular restriction categories. The more important restrictions, if they are applied widely and consistently across countries, might also have low cross-country variations and thus low factor analysis weights (Doove et al. 2001). *To resolve the first problem, we conducted a survey by interviewing CEOs in twenty multinational banks in China to evaluate the subjective weights based on their personal opinions. Meanwhile, a statistical factor analysis approach was applied to derive more objective weights from the data. Factor analysis is a statistical method used to describe variability among observed variables in terms of a potentially lower number of unobserved variables that are called factors.[2] Detailed analysis of the results is presented in Section 2. A.*

Second, economy-wide econometric studies are subject to the Lucas critique (1976). *The Lucas critique argues that it is naïve to attempt to predict the effects of a change in economic policy entirely on the basis of relationships observed in historical*

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[2] *Factor analysis, of which the principal components technique is an application, can simplify a complex set of data by combining many correlated variables into a smaller number of (unobserved) dimensions or factors. The factors have a statistical property in that they account for most of the variance in the restriction categories; in this sense, they represent a 'best fit' of the variables under study. In this study, factor analysis is imposed on the various scores of the different regulations. Some regulations are continuous variables, such as the 'minimum capital requirement for entry'; some are discrete numbers, such as 'whether there are any background or experience requirements for future bank managers'.' We rescaled the scores so that the values are comparable.*

data. In a 1976 paper Lucas drives home the point that this simple notion invalidates policy advice based on conclusions drawn from large-scale macroeconometric models. Because the parameters of those models are not structural, i.e., not policy-invariant, they will necessarily change whenever policy is changed. Hence, estimates of flows on economic variables are appropriate only if the economy remains within the same structure; they can be highly misleading in the face of any structural change or any policy or regulatory change during the period. When the data cover a long time period, there may be more than two different structural changes.   The ideal way to address this issue is to evaluate the TRI on an annual basis to trace any variations. *However, countries generally do not change their trade policies with such frequency, nor are surveys conducted on an annual basis. Therefore, in this study the TRIs are updated at intervals of two or three years.*

The main sources of the regulatory components of the TRI are the GATS schedules (for WTO members). However, information in the GATS schedules is limited by the positive listing approach. Consequently, the schedules do not include all the barriers that are in place. Therefore, this research will use information from three sequential World Bank surveys (Barth, Caprio, and Levine 2006). The World Bank surveys not only contain information on entry barriers and national treatment, but also on operational and prudential regulations. Furthermore, they took place during three different time periods -- 1998-2001, 2003, and 2007-2008 -- allowing us to examine the evolution of the TRI across countries over time by constructing a panel dataset.

Paralleling the calculation of the TRI, there have been efforts to estimate the economic effects of banking barriers. Compared with the results of studies that focus only on measuring the size of the barriers, these studies are able to provide profound insight into the impact of the barriers, such as the mechanisms through which the barriers may raise interest margins or reduce loan or investment volumes (Mattoo 1999; Mattoo, Rathindran, and Subramanian 2001; Mattoo, Stern, and Zanini 2007;

Dinh and Dee 2010). The impact study also attempts to identify the general equilibrium linkage within the economy and the welfare implications for consumers from using a general equilibrium approach (Dee and Hanslow 2000; Verikios and Zhang 2000). *Finally, a growing number of studies provide empirical evidence showing the relationship between financial system stability and financial regulations (Barth, Caprio and Ross 2001). To investigate the relationship between the regulatory/ownership environment and financial fragility, two discrete measures of whether a country's banking system suffered a crisis are used. A higher restriction leads to a higher probability of crisis and financial fragility. In contrast, using Bloomberg equity prices, Aspachs et al. (2007), Basurto, Hofmann and Goodhart (2006), and Goodhart (2004) construct a continuous measurement to measure financial stability or financial fragility. The measure of the probability of default is a transformation of the distance to the default indicator that is used by the IMF to gauge the soundness of the banking sector. The countries' fragility is then ranked based on this measurement. The second measurement will be used in this study due to the availability of data.*

There are several measures that can be used in the impact study, such as interest income, non-interest income, net interest margin, overhead expenses, the bank development index, non-performing loans, or the probability of default (Kalirajan et al. 2000；Barth et al. 2004；Dee 2005b；Dihel and Kalinova 2004；Barth et al. 2006). Because of difficulties in treatment of the data and in data availability, the net interest margin is the focus of many studies. The problem with the net interest margin, however, is that the restrictions may be both rent-creating and cost-escalating, and there is a risk that the two effects will be cancelled out and underestimated.

The trade barriers in services are rent-creating because the restrictions inflate markups. This matters crucially for how the trade or regulatory restrictions are modeled. It also matters crucially for their estimated effects. Those barriers that are listed as having a price impact via markups, and hence are rent-creating, are injected into the model as output tax equivalents, with the rents from these 'taxes' flowing to

the private-sector owners of the industries rather than to the government. The trade barriers in services are also cost-escalating because the restrictions add to the marginal costs. Their removal is modeled as a productivity improvement of that magnitude in the associated industry.

Therefore, in this paper we use two separate impact indexes – rent-creating and cost-escalating. (3)

Finally, most studies take a global view, resulting in limited research on a regional scale. This paper takes a regional perspective to estimate the TRI and the economic impacts in the ASEAN+3. To the best of our knowledge, there are only two studies that focus on regional trade restrictions in banking (Claessens and Glaessner 1998; Rajan and Sen 2002). However, they are mainly based on a descriptive method.

This study intends to answer the following two important questions: First, how do the ASEAN+3 countries adjust their trade barriers in banking? Is there a consistent pattern in the TRI as there are in other important regional economic policies, such as their exchange-rate arrangements (Feng and Wang 2010; Feng, Wang, and Hu 2010a and b). Second, what are the economic impacts of variations in trade barriers?

The remainder of this paper is organized as follows: Section 2 constructs and measures the trade restriction index; Section 3 describes the data and their sources; Section 4 estimates the economic impacts of the restrictions; and Section 5 concludes and suggests avenues for future research.

2. Measurements of Trade Barriers in Banking
2.1) Identification of non-prudential and prudential components and scores

There are three steps to measure the trade barriers in banking: identification of the components, allocation of the scores, and estimation of the weights. *We start with the components and then follow with the scores.*

The non-prudential components are identified by taking two steps: first, by

taking the WTO GATS schedule as a standard to convert the World Bank Survey Data (WBS) to the WTO GATS framework; second, by combining data from the World Bank survey, the APEC Individual Action Plan, and local legislation to provide additional information.

In order to trace the evolution of banking barriers in the ASEAN+3, we need to ascertain information on regulatory variations. The WTO commitment schedule provides a static benchmark to evaluate the TRI. A growing body of research uses the World Bank survey data on banking regulations and practices based on information provided by financial supervisory authorities throughout the world (Barth et al. 2010). The three sequential surveys conducted during the 1998-2000, 2002-2003, and 2006-2007 periods allow an examination of the regulatory changes in the ASEAN+3 region. The 2009 data are derived from the APEC Individual Action Plan (APEC IAP) and the central banks of each country.

We convert the WBS into the framework of the WTO GATS based on four trade modes. *They are the standard four 'modes of supply' in services trade as specified by the World Trade Organization. They include: services that are traded internationally across borders; services that require that the consumer is in the same location as the producer; services that require a commercial presence in the form of foreign direct investment; and services that require temporary cross-border movements by laborers.* Most of the information in the WBS belongs to the third mode, i.e., a commercial presence. Relying on the coding system of the two databases for matching and comparison, we find a very close match between the two databases (Table 1 in the Appendix). Information on the other three modes, when available, is provided by the APEC IAP which has been conducted on an annual basis starting in the year 2000.

In addition to the database's rich time-line, the WBS also provide information on **prudential restrictions** on foreign banking services, such as the capital adequacy ratio. In this paper, two most common prudential measures, the capital adequacy ratio

and the liquidity ratio, are taken into consideration to construct the TRI.[3]

The score for each component is assigned a 1 if there is any type of restriction, and 0 otherwise. When the survey result is a continuous rather than a discrete number, such as 'yes' or 'no', a ratio between 0 and 1 is calculated.

2.2) Estimation of the Weights

Weights are developed to measure the relative importance in the composite TRI. For example, prohibitions on local currency operations are more restrictive than restrictions on the skills and expertise of banking management personnel. Two methods are used to estimate the weights: subjective assessment and statistical factor analysis.

A small-scale survey was conducted with twenty CEOs of domestic and foreign banks in Shanghai by distributing a questionnaire regarding the importance of the restrictive components. The weights are estimated by factor analysis. Following Feng et al. (2010), the detailed weights estimations by factor analysis are presented in Tables 2 and 3 in the Appendix.

Prior to the factor analysis, there were experiments with various variables and different orders. But the remaining combination of variables did not pass the Kaiser-Meyer-Olkin measure (KMO) or the Bartlett tests of sphericity. Table 2 in the Appendix presents the results of the KMO and Bartlett tests that indicate that they are suitable for factor analysis

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[3] When data are collected, there are also other measures of prudential regulations, including the minimum capital-asset ratio requirement (%), does the capital adequacy ratio vary with market risks, what fraction of revaluation gains is allowed as part of the minimum capital liquidity requirement (%), the number of failed banks, and the percentage of total bank assets accounted for by failed banks (%). But because this information is not available for all of the sample periods for all countries, we are left with only one or two prudential measures.

The second and fifth columns in Table 3 in the Appendix list the eigenvalues that are greater than one before and after the rotation. F1 to F4 are the four factors that have been extracted. Columns 3 and 6 represent the percentage of the variances that have been explained by the underlying factors before and after the rotation. The rotation has the effect of optimizing the factor structure and equalizing the relative importance of the factors. Table 4 presents the component matrix from which the corresponding weights are derived after the rotation.

The actual weights are simple weighted averages of the subjective weights and the statistical estimated weights.

2.3) Evaluation Results of the TRI in the ASEAN+3

The TRI is computed using the assigned scores and weights with identified components, as represented in equation (1).

$$TRI_{jt} = \sum_{j=1}^{J} \sum_{i=1}^{I} Score_{it} * Weight_{it}$$

(1)

Where i=1,2….I , are components ,

j = 1,2…J are countries, and

t =t$_1$, t$_2$.,t$_3$…T

Figure 1 summarizes the steps in the construction of the index. Figure 2 presents the results of the calculated TRI.

Figure 1. An illustration of the construction of the trade restrictiveness index (TRI)

TRI$_{t1}$, TRI$_{t2,}$ ·········· TRI$_T$ COMPONENTS   SCORES

COMPOSITE WEIGHTS

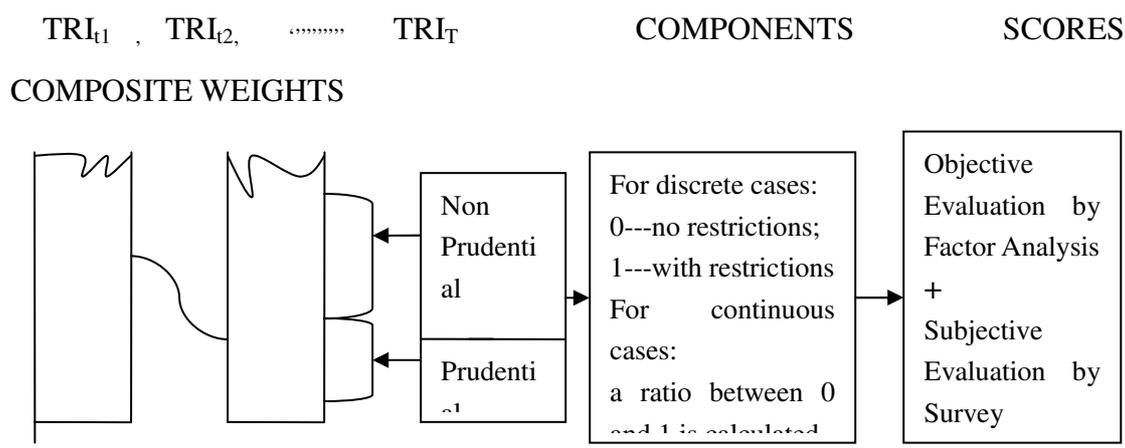|		Non Prudential	For discrete cases: 0---no restrictions; 1---with restrictions For continuous cases: a ratio between 0 and 1 is calculated	Objective Evaluation by Factor Analysis + Subjective Evaluation by Survey
		Prudential		

Figure 2. The TRI of the ASEAN+3, 2000-2009
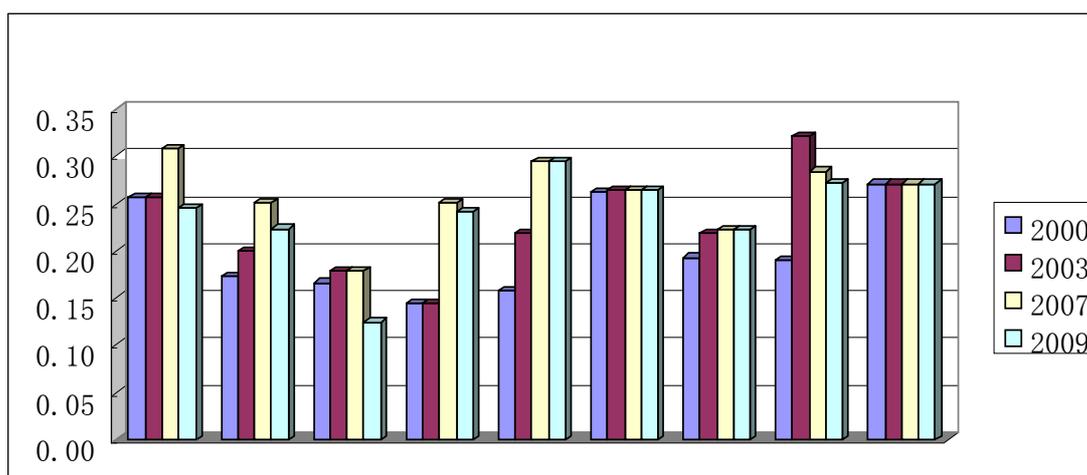
Note:

From left to right, the countries are China (2000, 2003, 2007, 2009), Indonesia (2000, 2003, 2007, 2009), Japan (2000, 2003, 2007, 2009), Korea (2000, 2003, 2007, 2009), Malaysia (2000, 2003, 2007, 2009), the Philippines (2000, 2003, 2007, 2009), Singapore (2000, 2003, 2007, 2009), Thailand (2000, 2003, 2007, 2009), and Vietnam (2000, 2003, 2007, 2009).

Figure 2 shows the wide dispersion in the trade restriction index for the ASEAN+3. The dispersion remains over the sample periods and there is no sign of

convergence of the restriction policies in the banking-services sector of these countries. Similarly, no uniform trend toward liberalization can be identified. Countries tend to be more cautious primarily because of the intense risk management aspects of the regulations required by the BIS.

The TRI in the graph indicates that Japan was the most liberal nation in the banking services trade during the sample periods. Following Japan, South Korea, Indonesia, and the regional financial center in Singapore were also relatively liberal. China and Vietnam were among the most restrictive nations in the region, even though there is a trend of becoming more liberal over time.

3. Data Description

The data sources are summarized in Table 1. Because data for Cambodia, Myanmar, and the Republic of Laos are unavailable, these countries are not included in this study.

Table 1. Summary of the Data Sources

Data Source	Purpose	Data Source	Purpose
World Bank Database Survey	Components Scores	Country Legislation: the Central Bank and the banking laws of each country	Components Scores
WTO GATS	Components Scores	Self-administered Survey	Weights
APEC Individual Action Plan	Components Scores	Bankscope Bloomberg	Effect Estimation

4. Estimation of the Impacts of Trade Barriers

4.1) Evaluation of Revenue and Cost Functions

4.1.1) Specification of the Functions

Economists generally agree that trade barriers are detrimental to economic efficiency. Efficiency is defined as a comparison between what is actually produced (output) and the consumption of resources (input). Sealey and Lindley's seminal paper (1977) analyses a bank's behavior within the context of a profit-maximizing producer. In it, they specify that the output of a bank is the services provided to the debtors. In particular, the dollar volume of the various types of earning assets is used as the measurement of a bank's output -- for example, the amount of loans a bank has invested-- which is analogous to the physical units of output of a non-bank firm.   For the purpose of the model developed in this paper, earning assets include interest earning assets and non-interest earning assets. Inputs are on the other side of the equation. The inputs of a bank include the implicit services incurred to attract

depositors, including capital, labor, and material, plus normal profits or the interest margin, which is the difference between the lending rate and the borrowing rate times the amount of loans. The operational trade restriction enters as a markup to the cost, a sub-component of the total costs.[4]

Hence, the revenue function is defined as in equation (2) and the entry trade barrier enters into the profit equation as the monopolistic margin to the normal interest margin:

$$R_{it} = \sum_{i=1,t=1,p=1}^{I,T,P} IeAsset_{p,it} + \sum_{i=1,t=1,q=1}^{I,T,Q} NIeAsset_{q,it} = C_{it} + \Pr ofit_{it}$$

$$\Pr ofit_{it} = (InterestRateM \arg in + TRI_{entry,it}) * LoanAmo \text{int}$$

Where i=1,2----I are the individual countries,

  t= 1,2…T are the time periods,

  p=1,2…P are the numbers of interest earning assets,

  q=1,2…Q are the numbers of non-interest earning assets,

  IeAsset is all the income from interest earning assets,

  NieAsset is all the income from non-interest earning assets,

TRIentry is the entry trade restriction index dummy

(2)

We define the cost function as follows:

$$C_{it} = \sum_{i=1,t=1,p=1}^{I,T,P} IeExp_{p,it} + \sum_{i=1,t=1,q=1}^{I,T,Q} NIeExp_{q,it} + \sum_{i=1,t=1,r=1}^{I,T,R} PersonnelExp + TRI_{it}$$

$$C_{it} = \sum_{i=1,t=1,p=1}^{I,T,P} IeAsset_{p,it} + \sum_{i=1,t=1,q=1}^{I,T,Q} NIeAsset_{q,it} - profit_{it}$$

Where i=1,2----I are the individual countries,

  t= 1,2…T are the time periods,

  p=1,2…P are the numbers of interest earning expenses,

  q=1,2…Q are the numbers of non-interest earning expenses,

  r=1,2…R are the numbers of personnel expenses,

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[4]As noted, diverse service barriers are classified by restrictions of entry or restrictions of establishment versus restrictions on operations after entry or establishment.

IeExp   are all interest earning expenses,

NieExp are all non-interest earning expenses,

PersonnelExp are personnel expenses,

TRI   is   the   operational   trade   restriction   index   dummy.
(3)

Equation (3) denotes that the cost is the value of all types of expenses, which is analogous to the money value of the inputs of a non-financial firm. Operational restrictions enter as a markup to the cost, a sub-component of the costs.

Entry trade restrictions are imposed into price system as a quasi tariff, and operational trade restrictions[5] are imposed into cost structure, thus affecting the productivity of the industry.

4.1.2) Panel Data Sampling

In order to evaluate equations (2) and (3), the Bankscope database is used. It provides standardized accounting data on publicly listed banks in the ASEAN+3 during the sample period. The standard accounting data include the balance sheets and the income statements of the 2,183 banks available in the database. However, the sample periods for each bank vary and are identified separately. We are therefore left with 269 banks whose sample periods fall between 2000 and 2009. The panel dataset includes a total of 269*10 data points. The estimated results of the revenue and cost functions are presented in Tables 4 and 5 in the Appendix.

4.2) Micro Impacts of Restrictiveness

-- Productivity equivalent and tax equivalent

This section evaluates the productivity and tax equivalent, which measures the percentage change in cost and revenue due to the TRI in banking. The formulas are

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[5] For example, it takes three months for approval of foreign bank entry. After liberalization, it takes one week. Less labor will be required for the same amount of work.

specified as follows:

Productivity _ Equivalent=$(C_1 - C_0)/C_0 *100\%$
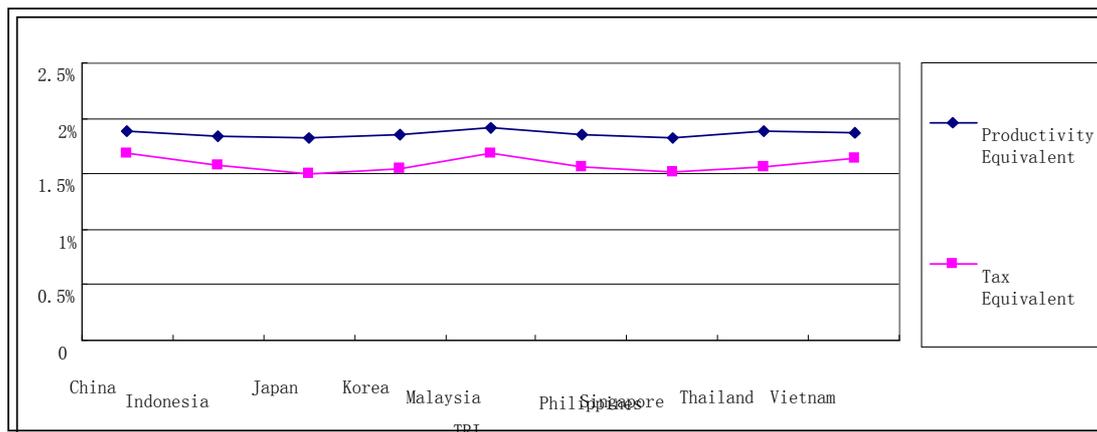
Tax_ Equivalent=$(P_1 - P_0)/P_0 *100\%$

(4)

Where C_1 ,P_1 are the predicted cost and revenue when there are trade barriers; and

C_0 , P_0 are the predicted cost and revenue when there are no trade barriers.

The estimated coefficients are presented in Tables 4 and 5 in the Appendix.

Figure 3 presents the productivity equivalent and tax equivalent with respect to the TRI. It posits that the productivity and tax equivalents are both positive, which indicates a positive relationship between cost and revenue and the TRI. Trade restrictions increase the costs of providing services and monopolistic revenue. This finding provides an additional dimension to the results of Kalirajan et al. (2000). In terms of individual countries, the two effects are greater in Malaysia, Vietnam, and China where there are higher TRIs; and the effects are smaller in Japan and Singapore where the TRIs are relatively lower. A further implication is that the productivity equivalent is higher than the tax equivalent, and the restrictiveness has a larger impact on cost than on revenue.

Figure 3. Productivity and Tax Equivalents

The chart shows a line graph with y-axis from 0 to 2.5% (marked at 0, 0.5%, 1%, 1.5%, 2%, 2.5%) and x-axis listing countries: China, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Thailand, Vietnam. The x-axis is labeled "TRI". Legend: Productivity Equivalent (dark blue diamonds), Tax Equivalent (magenta squares).

4.3) The Macro Impacts of Restrictiveness: The Relationship between the TRI and Stability

Many emerging market economies rely on capital controls to avoid unwanted disruptions in international capital flows (Eichengreen 2003). Trade barriers in banking are considered to be one of the critical capital control instruments to maintain financial and macroeconomic stability. They are also a tool to protect domestic markets. Banking is a dominant financing channel for the majority of the ASEAN+3 countries. Restrictions on foreign bank entry and operations represent major restrictions on capital flows in these countries. In this section, the macro impacts of trade barriers on the stability of the financial system are investigated.

To measure financial stability or financial fragility, we follow the approach developed by Aspachs et al. (2007), Basurto, Hofmann, and Goodhart (2006), and Goodhart (2004). The measure of fragility is the probability of default. The probability of default is the transformation of the distance to the default indicator (DD) used by the IMF to gauge the soundness of the banking sector. The variables used to calculate the DD indicator are obtained from Bloomberg equity prices and from information on the balance sheets of the banks in each country.

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In a standard valuation model, the DD indicator is determined by the market value of bank i's asset, V; the uncertainty or volatility of asset i's values, σ; the degree of leverage or extent of the bank's contractual liabilities, measured as the book value of liability at time t, D; and the maturity of debt is T.

$$DD_t = \frac{Ln(V_{i,t}\,/\,D_t) + (\mu - 1/2\sigma^2_{\,i})T}{\sigma_i\sqrt{T}}$$

(5)

where μ measures the mean growth of V of bank i.

The market value V and the volatility of σ are typically estimated using Black and Scholes (1973) and the option pricing model (Merton 1974).

Once the DD is computed, the theoretical probability of default (PoD) is obtained from (6)

$$PoD_t = N(-DD_t)$$

(6)

where N refers to the cumulative probability distribution function (cdf) for a variable that is standard, normally distributed with 0 of the mean and 1 of the standard deviation (Vassalou and Xing 2004).

Figure 4. The Impact of Restrictions on System Stability
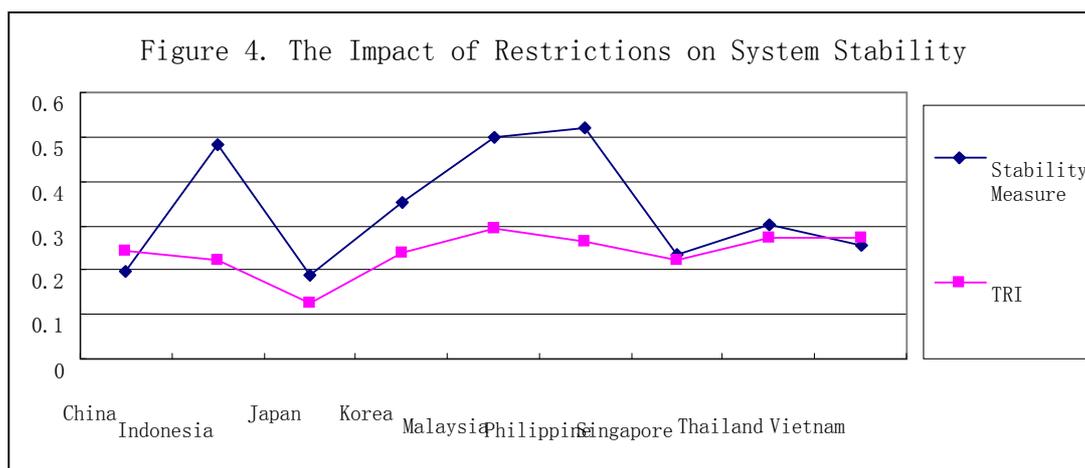
Note: Stability is measured by the probability of default.

Figure 4 presents the stability measures with respect to the trade restrictiveness index in each country. There are several interesting observations. First, in general, there seems to be no consistent trend between these two measures. Second, countrywide, in the cases of Japan and Singapore, the probability of default is lower and the TRI is not higher, as one would expect, compared with the other nations. The TRIs are relatively higher in Indonesia, the Philippines, and Malaysia, but they have not led to a lower probability of default and higher stability. Third, it appears that the higher TRIs in China and Vietnam, the only cases where the two lines cross, are associated with a lower probability of default.

Unlike Barth, Caprio and Ross (2001) who find that regulatory restrictiveness is positively linked with financial fragility, we find it is difficult to generalize from the sample. The relationship varies case by case. Furthermore, financial stability is not only a result of the regulatory environment; there are other contributory factors. One example is the macro global financial environment.

5. Conclusions and Future Research

The banking sector is one of the most important service sectors for the economies in the ASEAN+3, in particular, the developing economies. It is one of the largest contributors to gross domestic product, production, and employment. In order to further develop and reform the banking sector, countries should identify the trade barriers or restrictions and evaluate the consequential impacts of these restrictions.

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Unlike several other economic macro-variables, such as the exchange rate, which show a sign of convergence in regional behavioral patterns, there is a dispersion of trade policies in the banking sector. Furthermore, the dispersion pattern continues throughout the sample period. The observed dispersion can be accounted for by country differences in terms of the stage of development of their capital markets, the evolution of trade policy, and economic development.

The micro and macro effects of trade restrictions are complex. The economic modeling in this study provides indications of real income gains and cost increases; however, the stability effects vary from country to country. More research is needed to understand the additional implications. Our partial equilibrium study provides a foundation for general equilibrium modeling. CGE modeling can incorporate more detailed service-sector data and simulate revenue and cost effects to explore the effects on resource allocations and social welfare.

6. Appendix

Table 1. Matching Components between the WTO and the World Bank Schemes

Type	Component Category	Component Description	WTO Code	World Bank Code	Other Sources
Non-Prudential	1)Market Access/ Investment	1.Licensing of banks	WTO 103, WTO 104, WTO 106, WTO 107	WB 1.10a, WB 1.10b, WB 1.11.1, WB 1.11..2, WB 1.11.3	
		2.Foreign equity limitations	WTO 108	WB 1.12.1	

	3. Limitations on foreign bank shares of banking system assets	WTO 109	WB 3.8.2	
	4.Forms of entry	WTO 1.12.1, WTO 1.12.2, WTO 1.12.3	WB 1.12.1, WB 1.12.2, WB 1.12.3	
	5.Minimum capital requirements			LL &APEC
	6. Expansion of a physical presence	WTO 105a	Not comparable WB component	
	7.Composition of the board of directors	WTO 105b	Not comparable WB component	
	8. Local currency operations			LL &APEC
	9. Intended market differentiation of new banks			LL &APEC
	10. Sources of funds in the capitalization of new banks			LL &APEC
2)Market Access /Nature	11. Period of stay for the CEO or management staff			LL &APEC

	Person	12. Requirements of the CEO or management staff		LL &APEC
	3) National Treatment	13. Ratio between the number of denied domestic applications to the number of denied foreign applications	*	LL &APEC
		14. Ratio between the number of foreign banks to the number of domestic banks	*	LL &APEC
		15. Security		LL &APEC
		16. Insurance		LL &APEC
		17. Real Estate		LL &APEC
Prudential	4)Prudential	18.Minimum capital-asset ratio requirement		LL &APEC
		19.Does the capital-asset ratio vary with market risk		LL &APEC
		20. What fraction of the revaluation gains is allowed as part of capital		LL &APEC

21.Minimum liquidity requirement (%) <=1year		LL &APEC

Notes: 1) The scores are assigned 0 if no restrictions are apparent, and 1 if there are restrictions; 2) The coding systems are from Barth et al. (2010) and the authors' own identifications using the WTO GATS and WBS; '*' are the calculated continuous values between 0 and 1. They are the relative ratios for the corresponding component of each country.

3) LL&APEC denotes local legislation and the APEC Individual Action Plan Database.

Table 2. The Results of the KMO and Bartlett Tests

KMO measure		**0.622>0.5**
Bartlett's test of sphericity	χ Square	174.521
	Significance	0.000(significant)

Note: Kaiser (1974) recommends that a KMO statistic greater than 0.5 indicates factor analysis is appropriate. Bartlett's measure tests the null hypothesis that the original matrix is an identity. We reject this, hence a significance value of less than 0.05 is required.

Table 3. Identification of Variance-Explained Weights

Components	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Eigenvalues	*% of Variance*	*Cumulative %*	Eigenvalues	*% of Variance*	*Cumulative %*
F1	3.350	30.457	30.457	2.573	23.388	23.388
F2	2.737	24.	55.34	2.299	20.	44.28

		883	1		901	9
F3	1.300	11.815	67.156	2.069	18.811	63.100
F4	1.006	9.141	76.297	1.452	13.197	76.297

Note: A principal components extraction method is employed.

Table 4. Component Matrix after Rotation

	Components			
	F1 F2		F3	F4
Background/experience of future directors		0.521		
Background/experience of future managers		0.654		
Minimum capital requirements	-0.720			
Intended market differentiation of new banks	0.483			
Sources of funds for the capitalization of new banks	0.601			
Local currency operations			0.654	
Insurance activities			-0.772	
Securities activities			-0.720	
Is there a maximum percentage of capital that			0.633	

can be owned by a foreign owner?		
Minimum capital-asset ratio requirement (%)		0.805
Minimum liquidity requirement (%) <=1year		0.601

Note: According to standard treatment, those values that are less than 0.4 are suppressed in the output table.

Table 4.   Regression Summary for the Cost Function-Fixed Effect

	Coefficients	T-Statistics	F-Statistics
InterestExp	0.0526231	2.69	
NonInterestExp	0.3757808	4.45	
PersonnelExp	0.448004	4.82	
TRI	0.1904781	1.53	
Constant	0.0323136	1.08	7.40
InterestExp0	0.0489929	2.51	
NonInterestExp0	0.3737255	4.42	
PersonnelExp0	0.4328634	4.67	
Constant0	0.0326024	1.09	4.36

Note: The significance levels are 5% and 10% respectively.

Table 5.   Regression Summary for the Profit Function-Fixed Effect

	Coefficients	T-Statistics	F-Statistics
Cost	-0.4398412	-2.25	
Profit	0.1306937	1.04	
TRI	0.4208811	1.54	
Constant	0.0082863	1.11	3.90

Cost0	-0.4383276	-2.25	
Profit0	0.1297399	1.13	
Constant0	0.008857	1.12	4.82

Note: The significance levels are 5% and 10% respectively.

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